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ART 34 AMDT

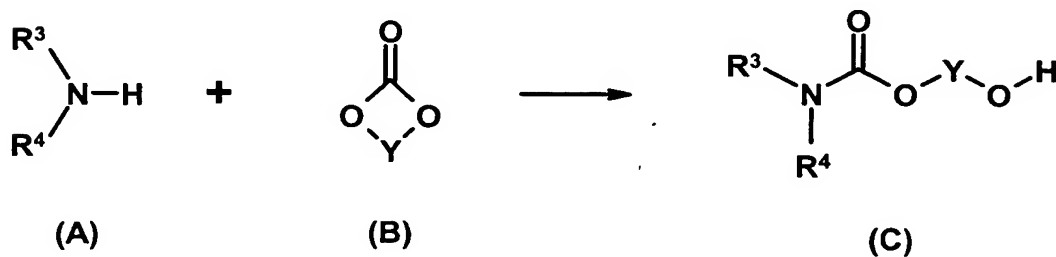
10/536968  
JC09 Rec'd CT/PTO 31 MAY 2005

**THE FOLLOWING ARE THE ENGLISH TRANSLATION  
OF ANNEXES TO THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT (ARTICLE 34):**

Amended Sheets (Pages 31-33)

We claim:

- 1) A process for preparing (meth)acrylic esters (F) containing urethane groups by
  - c) reacting an alcohol (C) containing urethane groups with (meth)acrylic acid or an ester of (meth)acrylic acid with a saturated alcohol (D), and
  - d) if desired, working up the reaction mixture from c), which comprises conducting the reaction c) in the presence of an enzyme (E).
- 2) A process as claimed in claim 1, wherein the enzyme (E) is a lipase, esterase or protease.
- 3) A process as claimed in claim 1 or 2, wherein the conversion in stage c) is set to at least 95%.
- 4) A process as claimed in any of the preceding claims, wherein the reaction c) is conducted at from 20 to 80°C.
- 5) A process as claimed in any of the preceding claims, wherein the alcohol (C) containing urethane groups is obtainable by
  - a) reacting an amine (A) with a carbonate (B), and
  - b) if desired, working up the reaction mixture obtainable from a).
- 6) A process as claimed in claim 5, wherein the alcohol (C) containing urethane groups is obtainable by a reaction thus



in which

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- 5       $R^3, R^4$       independently are hydrogen,  $C_1-C_{18}$  alkyl,  $C_2-C_{18}$  alkyl uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or are  $C_2-C_{18}$  alkenyl,  $C_6-C_{12}$  aryl,  $C_5-C_{12}$  cycloalkyl or a five- to six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, it being possible for each of the radicals stated to be substituted by aryl, alkyl, aryloxy, alkyloxy, heteroatoms and/or heterocycles, or are a group of the formula  $-[X_i]_k-H$ ,
- 10       $Y$       is  $C_2-C_{20}$  alkylene or  $C_5-C_{12}$  cycloalkylene or is  $C_2-C_{20}$  alkylene which is interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups and/or by one or more cycloalkyl,  $-(CO)-$ ,  $-O(CO)O-$ ,  $-(NH)(CO)O-$ ,  $-O(CO)(NH)-$ ,  $-O(CO)-$  or  $-(CO)O-$  groups, it being possible for each of the radicals stated to be substituted by aryl, alkyl, aryloxy, alkyloxy, heteroatoms and/or heterocycles,
- 15       $k$       is a number from 1 to 50, and
- 20       $X_i$       for  $i = 1$  to  $k$  can be selected independently from the group consisting of  $-CH_2-CH_2-O-$ ,  $-CH_2-CH_2-N(H)-$ ,  $-CH_2-CH_2-CH_2-N(H)-$ ,  $-CH_2-CH(NH_2)-$ ,  $-CH_2-CH(NHCHO)-$ ,  $-CH_2-CH(CH_3)-O-$ ,  $-CH(CH_3)-CH_2-O-$ ,  $-CH_2-C(CH_3)_2-O-$ ,  $-C(CH_3)_2-CH_2-O-$ ,  $-CH_2-CH_2-CH_2-O-$ ,  $-CH_2-CH_2-CH_2-CH_2-O-$ ,  $-CH_2-CHVin-O-$ ,  $-CHVin-CH_2-O-$ ,  $-CH_2-CHPh-O-$ , and  $-CHPh-CH_2-O-$ , where Ph stands for phenyl and Vin stands for vinyl.
- 25      7)      A reaction mixture obtainable as set forth in any of claims 1 to 6.
- 8)      A radiation curable or dual cure coating composition comprising a reaction mixture as claimed or set forth in any of claims 1 to 6.
- 30      9)      The use of (meth)acrylic esters containing urethane groups as set forth in any of claims 1 to 6 as reactive diluents or binders in radiation-curable or dual cure coating compositions or as comonomers in poly(meth)acrylates.
- 35      10)      The use of (meth)acrylic esters containing urethane groups as set forth in any of claims 1 to 6 in a thermally induced (co)polymerization.
- 11)      (Meth)acrylic esters containing urethane groups and obtainable by

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- a) reacting a polyethyleneimine, a hydrogenated polyacrylonitrile, a straight-chain, branched or dendritic polymer having amino functions or an at least partly hydrolyzed poly-N-vinylformamide having a weight-average molecular weight  $M_w$  of from 200 to 1 000 000 with a carbonate (B) at a temperature of from 0 to 120°C,

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- b) if desired, working up the reaction mixture obtainable from a),
- c) reacting the reaction mixture from a) or b) with (meth)acrylic acid or with an ester of (meth)acrylic acid with a saturated alcohol (D) in the presence of an enzyme (E), and
- d) if desired, working up the reaction mixture from c).

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